	Application No.	Applicant(s)
Notice of Allowability	09/779,361	RAWSON, FREEMAN LEIGH
	Examiner	Art Unit	
	Haresh Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *7/30/2004*.

2. ☒ The allowed claim(s) is/are *1-24*.

3. ☒ The drawings filed on *2/8/2001 and 7/30/2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

    Paper No./Mail Date _.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *10/29/2004* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Claim 1: A data processing network comprising:

a first server including a first network interface card (NIC) that connects the first server to a central switch; the first NIC comprising a buffer; the first server being a management server and managing a second server using management information;

the second server including a second network interface card (NIC) that connects the second server to the central switch;

wherein, the first NIC is configured to store, a first protocol data unit (PDU) received from the second NIC, in the buffer, after the first NIC determining that the first PDU is of a first type consisting of just a single header; wherein, the single header being a media access control (MAC) header; wherein, the first PDU is generated at the data link layer of the network's protocol stack, containing the management information; and

wherein, the first NIC is further configured to, detect available unused space, in a second PDU of a second type received from the second NIC and generated at the highest level of the network's protocol stack; and after determining that the first PDU and the second PDU are destined to a common target, the first NIC stores a payload of the first PDU in the available unused space of a payload of the second PDU to form a combined PDU.

Claim 13: A method of transmitting protocol data units (PDUs) across a data processing network comprising:

a first network interface card (NIC) storing a first protocol data unit (PDU) received from the second NIC, in a buffer of the first NIC; wherein, the first server includes the first network interface card (NIC) that connects the first server to a central switch; the first server being a management server and managing a second server using management information; the second server including a second network interface card (NIC) that connects the second server to the central switch;

the first NIC determining that the first PDU is of a first type consisting of just a single header; wherein, the single header being a media access control (MAC) header; wherein, the first PDU is generated at the data link layer of the network's protocol stack, containing the management information;

the first NIC detecting available unused space in a second PDU of a second type received from the second NIC and generated at the highest level of the network's protocol stack; and

the first NIC determining that the first PDU and the second PDU are destined to a common target, the first NIC storing a payload of the first PDU in the available unused space of a payload of the second PDU to form a combined PDU.

Claim 22: A management server suitable for operating in a data processing network, comprising:

the management server including a first network interface card (NIC) that connects the management server to a central switch; the first NIC comprising a buffer; the management server managing a second server using management information;

the second server including a second network interface card (NIC) that connects the second server to the central switch;

wherein, the first NIC is configured to store, a first protocol data unit (PDU) received from the second NIC, in the buffer, after the first NIC determining that the first PDU is of a first type consisting of just a single header; wherein, the single header being a media access control (MAC) header; wherein, the first PDU is generated at the data link layer of the network's protocol stack, containing the management information; and

wherein, the first NIC is further configured to, detect available unused space, in a second PDU of a second type received from the second NIC and generated at the highest level of the network's protocol stack; and after determining that the first PDU and the second PDU are destined to a common target, the first NIC stores a payload of the first PDU in the available unused space of a payload of the second PDU to form a combined PDU.

EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

2.   Authorization for this examiner's amendment was given in a telephone interview with

Joseph P. Lally on October 21, 2004.

3.   The application has been amended as follows:

Replace the following paragraph on page 1, line 5 of the specification, (paragraph, dated

7/30/2004, page 1, lines 2-3) as follows:

_ _ The subject matter disclosed in each of the following applications is related: Rawson,

Management of servers by polling protocol data units with minimized management traffic at data

link layer, copending application serial number ~~09/799,358~~ 09/779358, filed 2/8/2001; and Rawson,

Prioritization of network management server PDUs versus other PDUs at data link layer,

copending application serial number ~~09/799,362~~ 09/779,362, filed 2/8/2001. - -

Amendment of claims 1, 13, and 22 as follows:

Claim 1: A data processing network comprising:

~~a first server including a first network interface card (NIC) that connects the first server~~
~~to a central switch;~~
~~a second server including a second network interface card (NIC) that connects the second~~
~~server to the central switch;~~
~~wherein the first NIC is configured to store a first protocol data unit (PDU) in a buffer~~
~~upon determining that the first PDU is a first type; and~~

~~wherein the first NIC is further configured to detect available space in a second PDU of a second type and to store a payload of the first PDU in the available space of the second PDU to form a combined PDU upon determining that the first and second PDU share a common target.~~

a first server including a first network interface card (NIC) that connects the first server to a central switch; the first NIC comprising a buffer; the first server being a management server and managing a second server using management information;
the second server including a second network interface card (NIC) that connects the second server to the central switch;
wherein, the first NIC is configured to store, a first protocol data unit (PDU) received from the second NIC, in the buffer, after the first NIC determining that the first PDU is of a first type consisting of just a single header; wherein, the single header being a media access control (MAC) header; wherein, the first PDU is generated at the data link layer of the network's protocol stack, containing the management information; and
wherein, the first NIC is further configured to, detect available unused space, in a second PDU of a second type received from the second NIC and generated at the highest level of the network's protocol stack; and after determining that the first PDU and the second PDU are destined to a common target, the first NIC stores a payload of the first PDU in the available unused space of a payload of the second PDU to form a combined PDU.

Claim 13: A method of transmitting protocol data units (PDUs) across a data processing network comprising:

~~storing a first PDU of a first type in a buffer;~~
~~storing a payload of the first PDU in available space in a payload of the second PDU to form a combined PDU upon determining that the first and second PDU share a common target address; and~~
~~forwarding the combined PDU to the target address.~~

first network interface card (NIC) storing a first protocol data unit (PDU) received from the second NIC, in a buffer of the first NIC; wherein, the first server includes the first network interface card (NIC) that connects the first server to a central switch; the first server being a management server and managing a second server using management information; the second server including a second network interface card (NIC) that connects the second server to the central switch;
the first NIC determining that the first PDU is of a first type consisting of just a single header; wherein, the single header being a media access control (MAC) header; wherein, the first PDU is generated at the data link layer of the network's protocol stack, containing the management information;
the first NIC detecting available unused space in a second PDU of a second type received from the second NIC and generated at the highest level of the network's protocol stack; and
the first NIC determining that the first PDU and the second PDU are destined to a common target, the first NIC storing a payload of the first PDU in the available unused space of a payload of the second PDU to form a combined PDU.

Claim 22: A management server suitable for operating in a data processing network, comprising:

~~a host processor connected to a host memory via a host bus;~~
~~a bridge connecting the host bus to an I/O bus;~~
~~a network interface card (NIC) connected to I/O bus, wherein the NIC includes a~~
~~processor and a buffer, and further wherein the processor is configured to differentiate between~~
~~protocol data units (PDUs) of a first type and PDUs of a second type, buffer PDUs and of the~~
~~first type in the buffer, and to form a combined PDU by storing a payload of the first PDU in~~
~~available space within a payload of the second PDU the first type stored in the buffer with PDUs~~
~~of the second type upon determining that the first and second PUDs have a same common~~
~~database.~~

the management server including a first network interface card (NIC) that connects the
management server to a central switch; the first NIC comprising a buffer; the management server
managing a second server using management information;

the second server including a second network interface card (NIC) that connects the
second server to the central switch;

wherein, the first NIC is configured to store, a first protocol data unit (PDU) received
from the second NIC, in the buffer, after the first NIC determining that the first PDU is of a first
type consisting of just a single header; wherein, the single header being a media access control
(MAC) header; wherein, the first PDU is generated at the data link layer of the network's
protocol stack, containing the management information; and

wherein, the first NIC is further configured to, detect available unused space, in a second
PDU of a second type received from the second NIC and generated at the highest level of the
network's protocol stack; and after determining that the first PDU and the second PDU are
destined to a common target, the first NIC stores a payload of the first PDU in the available
unused space of a payload of the second PDU to form a combined PDU.

DETAILED ACTION

4.   The amendment on October 21, 2004 is noted and made of record.

5.   Claims 1-24, are presented for examination.

Allowable Subject Matter

6.   Claims 1-24, are allowed.

7.   The following is an examiner's statement of reasons for allowance:

Applicant's invention discloses a method, and a management server operating over the network, to transmit protocol data units (PDUs) packets across a data processing network.

The cited teaching provides the management server having a network interface card (NIC) that connects the management server to a second server through a network switch, to manage a second server using management information. NIC card of both the servers have a processor and a buffer on the cards.

The NIC card of the management server stores a management protocol data unit (PDU) packet received from the NIC of the second server into its own buffer. The management protocol data unit has a media access control (MAC) header and generated at the data link layer of the network's protocol stack with the management information. When the NIC card of the management server receives an application protocol data unit packet from the second server, it detects available unused space in the PDU packet, which is generated at the highest level of the network's protocol stack. The NIC card of the management server determines that both the management protocol data unit packet and the applicant protocol data unit packet are destined to a common network device, then it stores a payload of the management PDU in the available unused space of a payload of the application PDU to form a combined PDU packet, which is send to the target network device, in order to minimize bandwidth consumption.

The prior arts do teach a management server communicating with the other servers for managing information at the data link layer of the network's protocol stack, including low-level polling and priority mechanisms between management information and the application information packets. However, prior arts do not teach putting the management protocol data unit

on side and attaching to the unused space of the application protocol data unit packet, in order to minimize bandwidth consumption. Therefore, the claims are allowable over the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
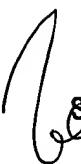
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haresh Patel whose telephone number is (571) 272-3973. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:00 am to 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Haresh Patel

October 29, 2004

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